

## ABSTRACT

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Posterior fossa syndrome in a population of children and young adults with medulloblastoma: a retrospective, multicenter Italian study on incidence and pathophysiology in a histologically homogeneous and consecutive series of 136 patients.

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**INTRODUCTION:** Posterior fossa syndrome (PFS) is a set of debilitating complications that can occur after surgery for posterior fossa tumors. This study aimed to assess the preoperative radiological and surgical risk factors for the onset of PFS in a histologically homogeneous population of children with medulloblastoma and compare it to a similar population of young adults.

**METHODS:** Included patients underwent posterior fossa surgery for medulloblastoma at 11 Italian neurosurgical wards (2003-2019) and were referred to Fondazione IRCCS Istituto Nazionale dei Tumori in Milan (INT) for postoperative treatments. We collected patients' pre- and post-operative clinical, surgical and radiological data from the INT charts. To compare the distribution of variables,

we used the Mann-Whitney and Fisher tests for continuous and categorical variables, respectively.

**RESULTS:** 136 patients (109 children and 27 young adults) were included in the study. Among children, 29 (27%) developed PFS, and all of them had tumors at midline site with invasion of the fourth ventricle. Radiological evidence of involvement of the right superior (39% versus 12%;  $p = 0.011$ ) or middle cerebellar peduncles (52% versus 18%;  $p = 0.002$ ) seemed more common in children who developed PFS. Young adults showed an expected lower incidence of PFS (4 out of 27; 15%), that may be due to anatomical, physiological and oncological elements.

**CONCLUSIONS:** This study confirmed some factors known to be associated with PFS onset and shed light on other debated issues. Our findings enhance an already hypothesized role of cerebellar language lateralization. The analysis of a population of young adults may shed more light on the often-neglected existence of PFS in non-pediatric patients.

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